



Missouri Department of Health and Senior Services

P.O. Box 570, Jefferson City, MO 65102-0570 Phone: 573-751-6400 FAX: 573-751-6010
RELAY MISSOURI for Hearing and Speech Impaired 1-800-735-2966 VOICE 1-800-735-2466

Richard C. Dunn
Director



Bob Holden
Governor

State Public Health Laboratory
307 West McCarty, Jefferson City, MO 65101

Emergency Response and Outreach Team
Telephone: 573-522-1444

Anthrax
Revision 11/14/03

Missouri Dept of Health and Senior Services (800) 392-0272 (24 hours)
State Public Health Laboratory (573) 751-3334 or 751-0633

Remember that these samples may be highly infective! Extreme caution should be taken in collecting, preparing for shipment and transporting any material suspected of being contaminated with a biological agent.

Specimen collection and transport:

Clinical:

Cutaneous anthrax: Sterile rayon or dacron swabs should be saturated in vesicular fluid from a previously unopened vesicle and placed into sterile, screw-cap tubes for transport to the lab. If illness is in eschar stage, rotate a sterile dacron or rayon swab under the edge of the eschar and place swab in sterile tube. Specimens should be kept cold, unless the volume collected is small enough to dry on the swab.

Inhalational anthrax: Suitable specimens include: pleural fluid, pleural tissue (fresh or frozen), CSF, transtracheal aspirates, blood collected in EDTA and sputum. Please note that blood cultures may not be positive until late in the illness, i.e. 2 to 8 days post-exposure and inhalation anthrax does not usually stimulate the production of sputum.. Samples should be kept cold and transported to the laboratory as soon as possible.

Gastrointestinal anthrax: Stool samples are suitable specimens. Samples should be kept cold and transported to the laboratory as soon as possible.

Reference cultures:

Any large Gram positive rods isolated from clinical or environmental samples may also be submitted to the MSPHL for confirmation/ identification. Cultures may be sent on any slant that will support the growth of bacillus, such as blood, chocolate or TSA.

Environmental: (includes any sample NOT from clinical sources)

NOTE: Environmental samples will only be accepted from a Law enforcement agency and the FBI must be involved. They can be no longer than 12 inches by 36 inches (including packaging). For larger samples, consult the Missouri State Public Health Laboratory (MSPHL) before submitting.

Samples may include paper, water, dry swab samples from air vents or other surfaces, powders, soil or other environmental samples. Only liquid samples need to be kept cold. All other samples can be transported at room temperature.

In individual situations environmental specimens received in the MSPHL must be accompanied by paper documentation which includes the following:

1. Agency name and telephone number and a contact person for the submitting law enforcement organization along with chain of custody papers. ([See Health Alert # 44](#), PDF format, requires Adobe Acrobat Reader [available here](#))
2. Paper documentation that the sample has been "prescreened" by a FBI-certified bomb or explosives technician and a certified Haz-Mat team.

The sample being submitted should only be the suspect material. Additional items from the area that are suspected of being exposed should be bagged up and held until testing is complete. For example, if a suspicious package/letter is received in a post office, only the suspicious package/letter should be brought to the MSPHL for testing. All accompanying pieces of mail and the mail bag or letter tray should be bagged in plastic until testing of the suspicious items is completed. Arrangements for where and how that material will be held are the responsibility of the investigating officials.

The specimen must be transported in a container that we are able to open within the safety cabinet. This would include plastic bags or other devices that can be easily opened. This does not include sealed plastic buckets, etc.

The MSPHL is unable to accommodate used Haz-mat gear or other collection gear. If the Haz-mat team has collected the specimen they should package their gear in a separate container from the specimen. Disposal of Haz-mat gear is the responsibility of the Haz-mat team.

Testing available:

Culture, isolate identification, PCR, DFA and rapid direct antigen detection by TRF.

IMPORTANT NOTE: Biological agent field test kits are, at this time, not sufficiently accurate for on-scene decision making in the field. [Click here](#) to see the United States Department Health and Human Services statement regarding these devices.
(http://www.dhss.state.mo.us/BT_Response/DHSSAnthraxAssayStatement.doc)

Reporting:

**All reporting times are the minimum time.
Any individual specimen could take longer.**

A culture specimen could be reported "presumptive positive" in 4-6 hours with complete identification and positive confirmation at 72 hours.

For raw clinical specimens a "presumptive negative" could be reported in as little as 4-6 hours. However, clinical specimens are routinely held for a total of 48 hours before a final negative report is issued.

For environmental specimens negatives could be reported in 24 hours if there is no suspicious growth. However, any suspicious growth would need to be investigated and could delay negative report.



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Botulinum toxin (*Clostridium botulinum*)

Revision 11/12/01

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State Public Health Laboratory (573) 751-3334 or 751-0633

Botulinum toxin has been developed as an aerosol weapon. There is no human data on the effects of breathing this toxin, but it may resemble the food borne syndrome. In case of a bioterrorism event, people may be exposed by breathing in the toxin or by ingesting contaminated food or water.

If cases of intentional botulinum toxin exposure are suspected **through clinical diagnosis**, CDC should be contacted through the Missouri Department of Health and Senior Services (800) 392-0272. Arrangements will be made at that time for the shipment of samples to CDC for testing.

**The State Public Health Laboratory is not equipped
to process specimens for botulinum toxin.**

CDC maintains the national supply of botulism anti-toxin and will ship the anti-toxin when needed. CDC is also available for consultation with physicians 24 hours a day. Botulism can be fatal and should be considered a medical emergency.



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Brucellosis (*Brucella species*)

Revision 10/28/02

Missouri Dept of Health and Senior Services (800) 392-0272 (24 hours)
State Public Health Laboratory (573) 751-3334 or 751-0633

Remember that these samples may be highly infective! Extreme caution should be taken in collecting, preparing for shipment and transporting any material suspected of being contaminated with a biological agent.

Specimen collection and transport

Clinical:

Specimens best suited for culturing include: blood (multiple), infected tissues and abscess material; bone marrow and tissue from spleen or liver can also be cultured, but may be available only at autopsy. *Brucella* has also been isolated from CSF, pleural fluid, peritoneal fluid and even urine. Specimens should be kept cold and transported to the MSPHL as quickly as possible.

Reference cultures:

Any culture may be submitted to the MSPHL for confirmation/identification. Cultures suspected of being *brucella* should be submitted on a blood agar slant.

Environmental samples:

Transmission by milk, milk products, meat and direct contact with infected animals is documented. If environmental sampling is indicated, consult the MSPHL for guidelines on sample selection and submission.

Reporting:

All reporting times are the minimum time. Any individual specimen could take longer.

Brucella species grow very slowly and raw clinical specimens will have to be held up to 10 days before reporting as negative. If colonies appear a presumptive positive could be reported in 4-6 hours, with confirmation within an additional 48 hours.



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Plague (*Yersinia pestis*)

Revision 10/28/02

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State Public Health Laboratory (573) 751-3334 or 751-0633

Remember that these samples may be highly infective! Extreme caution should be taken in collecting, preparing for shipment and transporting any material suspected of being contaminated with a biological agent.

Specimen collection and transport

Clinical:

Specimens best suited for culturing include: fluid aspirated from bubo, sputum and blood (multiple). Also, lymph node, bone marrow and lung tissues are suitable, but may be available only at autopsy. The specimens may be placed into Cary-Blair [enteric] transport media or, if that's unavailable, any sterile container and transported to the MSPHL as quickly as possible.

Reference cultures:

Any culture may be submitted to the MSPHL for confirmation/identification. Cultures suspected of being *Yersinia pestis* can be submitted on a blood or chocolate agar slant.

Environmental samples:

Plague is enzootic in some southwestern states and the risks of acquiring the disease are associated with conditions that provide food and shelter near human dwellings for plague-susceptible rodents and their attendant fleas. If environmental sampling is indicated, consult the MSPHL for guidelines on sample selection and submission.

Testing available:

Culture, isolate identification, PCR and rapid direct antigen detection by TRF.

Reporting:

All reporting times are the minimum time. Any individual specimen could take longer.

Yersinia pestis is not fastidious and may grow in 24-48 hours from clinical or environmental specimens. The MSPHL can perform an FA, PCR and TRF testing on the organism as soon as growth is apparent. A presumptive positive could be reported in 4-6 hours. Biochemical confirmation is presumptive at 24 hours and final at 48 hours. FA, PCR and TRF can be performed on isolates upon receipt at the MSPHL, with results in 1-6 hours.



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Ricin Toxin (*Ricinus communis*)

Revision 10/28/02

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State Public Health Laboratory (573) 751-3334 or 751-0633**

Remember that these samples may be toxic! Extreme caution should be taken in collecting, preparing for shipment and transporting any material suspected of being contaminated with this agent.

Specimen collection and transport

Acceptable samples:

Specimens best suited for testing include: paper, powders, soil or mud, water, food, drink, environmental swabs (Dacron, rayon or foam, not cotton) and environmental wipes (non-cotton gauze, polyester blend materials).

Reporting:

All reporting times are the minimum time. Any individual specimen could take longer.

Presumptive results should be available in 4 hours. Samples will be referred to CDC for confirmation.



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Staphylococcus Enterotoxin B (SEB)

Revision 07/16/03

Missouri Dept of Health and Senior Services (800) 392-0272 (24 hours)
State Public Health Laboratory (573) 751-3334 or 751-0633

Remember that these samples may be toxic! Extreme caution should be taken in collecting, preparing for shipment and transporting any material suspected of being contaminated with this agent.

Specimen collection and transport

Acceptable samples:

Specimens best suited for testing include: paper, powders, soil or mud, water, food, drink, environmental swabs (Dacron, rayon or foam, not cotton) and environmental wipes (non-cotton gauze, polyester blend materials).

Reporting:

All reporting times are the minimum time. Any individual specimen could take longer.

Presumptive results should be available in 4 hours. Samples will be referred to CDC for confirmation.



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Smallpox Virus

Revision 01/07/03

Missouri Dept of Health and Senior Services (800) 392-0272 (24 hours)
State Public Health Laboratory (573) 751-3334 or 751-0633

Contact the Missouri State Public Health Laboratory (MSPHL) to obtain specific instructions prior to collecting any samples.
The MSPHL is not equipped to process any specimens for small pox. All specimens will be transported to the Centers for Disease Control.

Remember that these samples may be highly infective! Extreme caution should be taken in collecting, preparing for shipment and transporting any material suspected of being contaminated with a biological agent.

The following information is meant only as a general guideline.

For information on Smallpox vaccination (Vaccinia) laboratory support from the Missouri State Public Health Laboratory, please [click here](#).

Specimen collection and transport

Clinical:

Uncoagulated blood, serum, drainage from skin lesions/scrapings, touch prep slide from skin lesions.

Specimens should be collected by someone who has recently been vaccinated (or is vaccinated that day) and who wears the following protective equipment:

- Disposable protective latex or vinyl gloves (sterile gloves not required)
- Disposable protective gowns
- N-95 masks or higher
- Protective eyewear
- Shoe covers
- Plastic biohazard bags

To obtain vesicular or pustular fluid, it is often necessary to open lesions with the blunt edge of a scalpel. The fluid can then be harvested on a cotton swab. Scabs can be picked off with forceps. Specimens should be deposited in a vacutainer tube with no transport media and sealed with adhesive tape. This tube, in turn, should be enclosed in a second durable, watertight container. Arrangements will be made to transport the specimens to CDC.

For detailed collection and transport information from the CDC, [click here](#) (PDF format, requires Adobe Acrobat Reader [available here](#)).

Please note:

- Smallpox is spread person to person by droplet or aerosol expelled from the oropharynx of infected person.
- Contaminated clothing or bed linens can also spread the virus.
- Smallpox has a 12-14 day incubation period.
- An individual can be vaccinated up to 3 days after exposure. Vaccination takes 8-10 days to become effective.

To obtain a copy of the "Evaluating Patients for Smallpox" poster from the CDC, [click here](#) (PDF format, requires Adobe Acrobat Reader [available here](#)), or call the CDC at (888) 246-2675.



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Tularemia (*Francisella tularensis*)

Revision 10/28/02

**Missouri Dept of Health and Senior Services (800) 392-0272 (24 hours)
State Public Health Laboratory (573) 751-3334 or 751-0633**

Remember that these samples may be highly infective! Extreme caution should be taken in collecting, preparing for shipment and transporting any material suspected of being contaminated with a biological agent.

Specimen collection and transport

Clinical:

Tissue samples from humans (or animals) must be submitted frozen (-30 to -70°C.) Best samples for testing include liver, spleen, lungs or lymph node. If pneumonic tularemia is suspected, collect a sputum or bronchial/tracheal wash. They can be placed into any sterile container that seals well. Blood can also be cultured, but is seldom positive.

Reference cultures:

The MSPHL can also confirm or identify any organism isolated from another laboratory, which is suspected of being *F. tularensis*. Reference cultures should be submitted on an enriched chocolate slant.

Environmental samples:

At this time environmental sampling, if performed, would be situation specific. No standardized testing procedures are available. Consult the MSPHL.

Reporting:

All reporting times are the minimum time. Any individual specimen could take longer.

F. tularensis is a very slow-growing organism. Primary isolation from a clinical specimen may take 3-5 days. The MSPHL can perform an FA and PCR directly on tissue specimens. This could be completed within 2-3 hours after receipt of the specimen in the lab. Confirmation of a suspect organism isolated at another laboratory by direct FA and PCR can be completed within 1-2 hours of receipt in the MSPHL.



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Viral Encephalitis (*Arbovirus*)

Revision 02/08/02

Missouri Dept of Health and Senior Services (800) 392-0272 (24 hour)
State Public Health Laboratory (573) 751-3334 or 751-0633
Contact the MSPHL at (573) 751-0633 to obtain specific shipping instructions.

Remember that these samples may be highly infective! Extreme caution should be taken in collecting, preparing for shipment and transporting any material suspected of being contaminated with a biological agent.

Specimen Collection and Transport

Clinical Specimens:

- Collect acute serum and CSF.
- Terminal/postmortem: Serum and pathology samples plus brain material if an autopsy is performed.
- Call for detailed instructions of specimen collection and transport.

Signs and Symptoms:

- Sudden onset of illness with generalized malaise, spiking fevers, rigors, severe headache, photophobia, and myalgias. Nausea, vomiting, cough, sore throat, and diarrhea may follow. full recovery takes 1-2 weeks.
- Incubation period from 1-5 days.
- Standard precautions for healthcare workers.



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Viral Hemorrhagic Fevers (VHF)

(Ebola, Marburg, Lassa, Rift Valley, Yellow Fever, Dengue Fever, Hantavirus,
Congo-Crimean, and Venezuelan Hemorrhagic fevers)

Revision 12/07/01

**Missouri Dept of Health and Senior Services (800) 392-0272 (24 hour)
State Public Health Laboratory (573) 751-3334 or 751-0633**

**Contact the MSPHL at (573) 751-0633 prior to collecting any samples
to obtain specific instructions.**

**The SPHL is not equipped to process any specimen for hemorrhagic fevers. All specimens will be
transported to the Centers for Disease Control (CDC).**

**Remember that these samples may be highly infective! Extreme caution should be
taken in collecting, preparing for shipment and transporting any material suspected of
being contaminated with a biological agent.**

The following information is meant only as a general guideline.

Specimen collection and transport

Clinical:

Collect whole blood*, serum, tissues.

* Whole blood may be frozen. Do not centrifuge suspected VHF specimens because this increases risk to the lab worker. If serum specimens have already been prepared, these can be used. Place specimens in plastic tubes for shipping and storage and be sure that the tubes are sealed and properly labeled. Ship frozen on dry ice.

For fatal cases collect liver biopsy, skin biopsy, as well as other tissues for biopsy (spleen, lung, heart, and kidney). Biopsy specimens should be fixed in formalin and stored at room temperature (do not freeze).

Signs and Symptoms:

Within a few days of becoming infected with VHF: High fever, headache, muscle aches, stomach pain, fatigue, diarrhea, sore throat, rash, red and itchy eyes, vomiting blood, bloody diarrhea.

Within one week of becoming infected with VHF: chest pain, blindness, bleeding, shock, and death.

- **Contact Precautions for healthcare workers.**
- **Decontamination is accomplished with hypochlorite or phenolic disinfectants.**
- **Isolation measures and barrier nursing procedures are indicated.**